

wherein said desired transmission wavelengths are selected to coincide with peaks in spectral signatures whose maxima correlate to those of specific compounds;

whereby said binned pixels provide spatial resolution in an image; and

whereby said mosaics of filters and said binned pixels provide spectral resolution in an image.

2. (New). A device according to claim 1, wherein said filters constitute uniformly spaced, equally sized nanometer spheres, wherein adjacent nanometer spheres are spaced apart from each other by a uniform distance of approximately half of said desired transmission wavelength.

3. (New). A device according to claim 1, wherein said single pixels are approximately 5 micrometers.

4. (New). A device according to claim 1, wherein each of said binned pixels consists of an array of 3x3 single pixels.

5. (New). A device according to claim 1, wherein each of said mosaics of filters contains a filter transmitting 390 nm, with a resolution of at most approximately 20 nanometers.

6. (New). A device according to claim 1, wherein each of said mosaics of filters contains a filter transmitting 410 nm, with a resolution of at most approximately 20 nanometers.

7. (New). A device according to claim 1, wherein each of said mosaics of filters contains a filter transmitting 545 nm, with a resolution of at most approximately 20 nanometers.

8. (New). A device according to claim 1, wherein each of said mosaics of filters contains a filter transmitting 580 nm, with a resolution of at most approximately 20 nanometers.

9. (New). A device according to claim 1, wherein each of said mosaics of filters contains a filter transmitting 635 nm, with a resolution of at most approximately 20 nanometers.

10. (New). A device, comprising:

a plurality of binned pixels, each of said binned pixels comprising a 3x3 array of single pixels;

a plurality of mosaics of filters, each mosaic masking a corresponding binned pixel, and each of said filters masking a single pixel;

wherein each of said filters transmits light of at least one selected frequency band to a corresponding single pixel;

wherein said selected frequency band for one of such filters in each of said mosaics is 390 nanometers, plus or minus approximately 10 nanometers;

wherein said selected frequency band for one of such filters in each of said mosaics is 410 nanometers, plus or minus approximately 10 nanometers;

wherein said selected frequency band for one of such filters in each of said mosaics is 545 nanometers, plus or minus approximately 10 nanometers;

wherein said selected frequency band for one of such filters in each of said mosaics is 580 nanometers, plus or minus approximately 10 nanometers;

wherein said selected frequency band for one of such filters in each of said mosaics is 635 nanometers, plus or minus approximately 10 nanometers;

whereby said binned pixels provide spatial resolution in an image; and

whereby said mosaics of filters and said binned pixels provide spectral resolution in an image.

11. (New). A process for using a solid state detector chip having a plurality of single pixels, comprising: